510(k) Summary

AUG 2 4 2012

Introduction

According to the requirements of 21 CFR 807.92, the following information provides sufficient detail to understand the basis for a determination of substantial equivalence.

Submitter Name, Address,

Roche Diagnostics 9115 Hague Road P.O. Box 50416

Contact

Indianapolis, IN 46250-0416

Phone: (317) 521-3577 Fax: (317) 521-2425

Contact Person: K. Colleen Adams, Regulatory Affairs Principal

Date Prepared: June 27, 2012

Device Name

Proprietary name:

(1) Elecsys HSV-2 IgG Immunoassay

(2) Elecsys PreciControl HSV

Common name:

(1) HSV-2 IgG

(2) PreciControl HSV

Classification name: (1) Class 2, 21 CFR 866.3305, Herpes simplex virus

serological assays

(2) Class 1, 21 CFR 862.1660, Quality control material

(assayed and unassayed)

Product Code:

MYF, JJX

Predicate Device:

Focus HerpeSelect 1 and 2 Immunoblot IgG (K000238)

Device Description

- (1) Elecsys HSV-2 IgG is a two-step sandwich immunoassay with streptavidin microparticles, biotinylated recombinant HSV-2-specific antigen labeled with a ruthenium complex and electrochemiluminescence detection. This assay is a qualitative test based on a cut-off formula dependent on the negative and positive calibrators. Cut-off index (COI) is based on the ratio of assay signal to cut-off signal (also abbreviated s/co). COI values greater than or equal to 1.0 are considered positive for the presence of anti-HSV-2 IgG antibody. Results are determined using a two-point calibration. The test system contains the human serum-based calibrators intended for use with the system.
- (2) Elecsys PreciControl HSV contains lyophilized control serum based on human serum. The controls are used for monitoring the accuracy of the Elecsys HSV-2 IgG immunoassay.

Note: The reagent and calibrators are packaged together in the Elecsys HSV-2 IgG assay, while the associated PreciControl is packaged separately.

Intended Use/Indications for Use

Elecsys HSV-2 IgG Immunoassay:

The Roche Elecsys HSV-2 IgG immunoassay is a test for the *in vitro* qualitative determination of IgG class antibodies to HSV-2 in human serum and lithium-heparin plasma, K₂-EDTA plasma, and K₃-EDTA plasma. The test is intended for sexually active individuals and expectant mothers as an aid in presumptive diagnosis of HSV-2 infection. The predictive value of positive or negative results depends on the population's prevalence and the pretest likelihood of HSV-2. The electrochemiluminescence immunoassay "ECLIA" is intended for use on the indicated Elecsys and **cobas e** immunoassay analyzers.

This test is not FDA cleared for screening blood or plasma donors.

The performance of this assay has not been established for use in a pediatric population, neonates and immunocompromised patients or for use at point of care facilities.

Elecsys PreciControl HSV:

The Elecsys PreciControl HSV is used for quality control of the Elecsys HSV-2 IgG immunoassay on the Elecsys and **cobas e** immunoassay analyzers.

Substantial Equivalence

The Elecsys HSV-2 IgG immunoassay test system is substantially equivalent to other devices legally marketed in the United States.

- (1) Elecsys HSV-2 IgG Immunoassay is equivalent to HerpeSelect 1 and 2 Immunoblot, MRL/Focus Diagnostics (K000238).
- (2) Elecsys PreciControl HSV is equivalent to the Elecsys PreciControl Anti-CCP (K081338).

Substantial Equivalence -Comparison

The following tables compare the Elecsys HSV-2 IgG immunoassay and PreciControl HSV with their respective predicate devices.

Comparison of Assays—Similarities and Differences

Immunoassay Comparison		
Feature	Elecsys HSV-2 IgG Immunoassay	Focus HerpeSelect 1&2
T:Cature .	(Candidate Device)	(Predicate Device: K000238)
	General Assay Feat	The state of the s
Intended	The Roche Elecsys HSV-2 IgG	Focus Diagnostics' HerpeSelect 1 and
·Use/	immunoassay is a test for the <i>in vitro</i>	2 Immunoblot IgG test is intended for
Indications	qualitative determination of IgG class	qualitatively detecting the presence or
for Use	antibodies to HSV-2 in human serum	absence of human IgG class antibodies
	and lithium-heparin plasma, K ₂ -	to HSV-1 and HSV-2 in human sera.
	EDTA plasma, and K ₃ -EDTA plasma.	The test is indicated for testing
	The test is intended for sexually active	sexually active adults or expectant
	individuals and expectant mothers as	mothers for aiding in the presumptive
	an aid in presumptive diagnosis of	diagnosis of HSV-1 and HSV-2
	HSV-2 infection. The predictive value	infection. The predictive value of a
	of positive or negative results depends	positive or negative result depends on
	on the population's prevalence and the	the population's prevalence and the
	pretest likelihood of HSV-2.	pretest likelihood of HSV-1 and HSV-
	The electrical resiliencia	2 infection. The performance of this
	The electrochemiluminescence immunoassay "ECLIA" is intended	assay has not been established for use
	for use on the indicated Elecsys and	in a pediatric population, for neonatal screening, for testing of
	cobas e immunoassay analyzers.	immunocompromised patients, for use
	cobas e miniunoassay anaryzers.	by a point of care facility or for use
	The test is not FDA cleared for	with automated equipment.
	screening blood or plasma donors.	with automated equipment.
	sercening blood of plasma donors.	
	The performance of this assay has not	
	been established for use in a pediatric	
	population, neonates and	
	immunocompromised patients or for	
	use at point of care facilities.	
Assay	Sandwich assay	Nitrocellulose immunoblot
Protocol	,	
Detection	Electrochemiluminescent	Alkaline phosphatase (qualitative)
Protocol	Immunoassay	
Applications	18 minutes	Manual procedure

Comparison of Assays—Similarities and Differences

Immunoassay Comparison		
Feature	Elecsys HSV-2 IgG Immunoassay (Candidate Device)	Focus HerpeSelect 1&2 (Predicate Device: K000238)
	General Assay Feat	tures
Instrument Platform	Elecsys 2010, MODULAR ANALYTICS E170, cobas e 411, cobas e 601, and cobas e 602	Manual procedure
Sample Volume	20 μL	20 μL
Sample Type	Human serum and Lithium-heparin, K ₂ -EDTA, and K ₃ -EDTA plasma	Human serum
Reagents	Reagents consist of streptavidin-coated microparticles, biotinylated HSV-2 antigen (recombinant, from <i>E. coli</i>), ruthenylated HSV-2 antigen and negative and positive calibrators.	Reagents consist of HSV-1 and HSV-2 differentiation antigen strips, alkaline phosphatase-conjugated goat anti-human IgG, bromo-chloro-indodyl phosphate and nitroblue tetrazolium substrate and negative and positive controls.
Calibrator	Included with the reagent kit	Not included with this qualitative test
Calibration Interval	Calibration must be performed once per reagent lot using fresh reagent (i.e. not more than 24 hours since the reagent kit was registered on the analyzer). Renewed calibration is recommended as follows:	Calibrators are not included for this qualitative assay. Negative and positive controls are run with every test.
	 After 1 month (28 days) when using the same reagent lot. After 7 days (when using the same reagent kit on the analyzer). As required: e.g. quality control findings outside the specified limits 	

Comparison of Assays—Similarities and Differences, continued

	Immunoassay Comparison		
Feature	Elecsys HSV-2 IgG Immunoassay (Candidate Device)	Focus HerpeSelect 1&2 (Predicate Device: K000238)	
	General Assay Feat	ures	
Controls	Elecsys PreciControl HSV	Negative and positive controls are included with the Focus kit.	
Traceability / Standardizati on	The Elecsys HSV-2 IgG immunoassay has been standardized a Roche standard. The units have been selected arbitrarily.	There is no standardization for this qualitative assay.	
Reagent Stability	Reagents, ready to use: 2-8°C - Up to the stated expiration date After opening at 2-8°C - 8 weeks On the analyzers - 21 days Calibrators (lyophilized): Unopened at 2-8°C - Up to stated expiration date After reconstitution at 2-8°C - 14 days On the Elecsys 2010 and cobas e 411 20-25°C - Up to 5 hours On the MODULAR ANALYTICS E170, cobas e 601, and cobas e 602 - Use only once	Kits and reagents are stable through the end of the month indicated on their expiration dates when stored at 2-8°C.	
Cutoffs	The analyzer automatically calculates the cutoff based on the measurement of Cal 1 and Cal 2. The result of a sample is given either as reactive or non-reactive as well as in the form of a cutoff index.	Positive or negative results are generated by this qualitative assay by comparing bands on the nitrocellulose to a cut-off/control strip.	

Comparison of Assays—Similarities and Differences, continued

**************************************	Immunoassay Comparison	
Feature	Elecsys HSV-2 IgG Immunoassay (Candidate Device)	Focus HerpeSelect 1&2 (Predicate Device: K000238)
	General assay featur	es <u>Hall</u>
Cutoffs (continued)	For the Elecsys HSV-2 IgG immunoassay, the interpretation of the results is:	
	Non-reactive < 1.0 COI Reactive ≥ 1.0 COI	
Result Interpretation	Samples with a cutoff index < 1.0 are non-reactive in the Elecsys HSV-2 IgG assay. These samples are considered negative for HSV-2 IgG-specific antibodies and do not need further testing. Samples with a cutoff index of ≥ 1.0 are considered reactive in the Elecsys HSV-2 IgG assay.	Compare each band on a strip relative to the reading control band. The reading control band is the IgG-2 band on the Cutoff/Positive Control strip. If the band is as dark, or darker than the reading control band, then the band is reactive (+). Likewise, if the band is lighter than the reading control band, then the band is unreactive (neg.). The overall band reactivity is then used to interpret results.
Limits of	LoB = 0.11 COI	Not applicable to this qualitative
Measurement Hook Effect	LoD = 0.1244 COI No hook effect up to 10 COI	Not tested

Comparison of Assays—Similarities and Differences, continued

	Immunoassay Comparison		
Feature	Elecsys HSV-2 IgG Reagent and Calibrator (Candidate Device)	Focus HerpeSelect 1&2 (Predicate Device: K000238)	
	Labeled Performance Ch	naracteristics	
Precision	Intra-assay: Low Control: SD 0.005 COI High Control: CV 1.3% Serum Samples < 0.8 COI:	Inter Laboratory Reproducibility: An internal investigator and 2 external laboratories assessed the device's reproducibility. Seven samples were run in triplicate on 3 different days. Using the Focus Elisa Index (negative if less than 0.90, equivocal if between 0.90 and 1.10, and positive if greater than 1.10) the manufacturer was able to demonstrate 100% agreement with intra-assay, inter-assay, inter-lot and inter-lab precision testing.	

Comparison of Assays—Similarities and Differences, continued

	Immunoassay Comparison		
Feature	Elecsys HSV-2 IgG Immunoassay (Candidate Device)	Focus HerpeSelect 1&2 (Predicate Device: K000238)	
	Labeled Performance Characteristics		
Analytical Specificity	311 HSV-2-negative specimens, which were positive for the following cross reactants, were tested with the Elecsys HSV-2 IgG and the comparator assay: Antinuclear antibodies, Varicella zoster virus, Human indefficiency virus, Cytomegalovirus, Neisseria gonorrhea, Toxoplasma gondi, Chlamydia trachomatis, Candida albicans, Epstein Barr virus, Rubella, E. Coli, HSV-1, and Treponema pallidum. 100% agreement was demonstrated between the two assays.	The sponsor tested 32 HSV negative samples which were positive for Cytomegalovirus, Epstein Barr virus, Virus Capsid antigen, Human herpesvirus6 or Varicella zoster virus. Eight of the samples were found to be positive with the Focus Immunoblot, while the 24 remaining samples were negative.	

Comparison of Assays—Similarities and Differences, continued

Focus HerpeSelect 1&2 (Predicate Device: K000238) acteristics The performance of this assay has not been established for the general population. The performance of this assay has not been established for ruling out diseases with similar symptoms, e.g., Candida albicans, Bacteriodes species, G. vaginalis, Mobiluncus species. Instead, also use culture or other appropriate methods. The performance of this assay has not been established for matrices other than serum, or visual result determination(s), or monitoring HSV therapy. All results from this and other serologies must be correlated with clinical history, epidemiological data, and other
 The performance of this assay has not been established for the general population. The performance of this assay has not been established for ruling out diseases with similar symptoms, e.g., Candida albicans, Bacteriodes species, G. vaginalis, Mobiluncus species. Instead, also use culture or other appropriate methods. The performance of this assay has not been established for matrices other than serum, or visual result determination(s), or monitoring HSV therapy. All results from this and other serologies must be correlated with clinical history,
not been established for the general population. The performance of this assay has not been established for ruling out diseases with similar symptoms, e.g., Candida albicans, Bacteriodes species, G. vaginalis, Mobiluncus species. Instead, also use culture or other appropriate methods. The performance of this assay has not been established for matrices other than serum, or visual result determination(s), or monitoring HSV therapy. All results from this and other serologies must be correlated with clinical history,
 data available to the attending physician in evaluating the patient. The prevalence of infection will affect the assay's predictive value. As with other serological tests, negative results do not rule out the diagnosis of herpes smiplex disease. The time required to seroconverst following the primary infection varies with the individual; the specimen may have been drawn prior to the appearance of detectable antibodies. False negative results may occur when the infecting virus is gG deficient, or because it is unknown if the assay's antigen was

Comparison of Assays—Similarities and Differences, continued

Immunoassay Comparison			
Feature	Elecsys HSV-2 IgG Immunoassay	Focus HerpeSelect 1&2	
reature	(Candidate Device)	(Predicate Device: K000238)	
ANTERIOR STATE OF THE STATE OF	Labeled Performance Cha	racteristics	
continued	The assay is unaffected by icterus (bilirubin < 1130 µmol/L or < 66 mg/dL), hemolysis (Hb < 0.621 mmol/L or < 1000 mg/dL), lipemia (Intralipid < 2000 mg/dL), biotin (< 287 nmol/L or < 70 ng/mL), and rheumatoid factor (< 1500 IU/mL). Criterion: Mean recovery of positive samples within ± 20 % of serum value. Correct assignment of negative samples and recovery of positive samples ± 20 %. Samples should not be taken from patients receiving therapy with high biotin doses (i.e. > 5 mg/day) until at least 8 hours following the last biotin administration. No interference was observed from rheumatoid factors up to a concentration of 1500 IU/mL. In vitro tests were performed on 18 commonly used pharmaceuticals and in addition on Famciclovir, Acyclovir and Valacyclovir. No interference with the assay was found. Assay performance for sodium citrate	 As with other serological tests, false positive results may occur. Repeat testing or testing with a different device may be indicated in some settings, e.g., patients with a low likelihood of HSV infection. A single positive result only indicates previous immunologic exposure; level of antibody response or class of antibody response may not be used to determine active infection or disease state. The magnitude of the index value above the Cut-off does not indicate the total amount of antibody present. Serology cannot distinguish genital from oral infections. When appropriate, culture is recommended to identify the infection site. However, false negative HSV cultures are common, especially in patients with recurrent infection or with healing lesions. 	

Comparison of Assays—Similarities and Differences, continued

Immunoassay Comparison		
Feature	Elecsys HSV-2 IgG Immunoassay (Candidate Device)	Focus HerpeSelect 1&2 (Predicate Device: K000238)
	Labeled Performance Cha	
Limitations,	In rare cases, interference due to	
continued	extremely high titers of antibodies to	
	streptavidin or ruthenium can occur.	
	These effects are minimized by	
	suitable test design.	
	Cross-reactivity for HPV and various	
	types of bacterial vaginosis-causing	
	agents (e.g., Mobiluncus spec,	
	Gardnerella vaginalis, and	
	Bacteroides spec) were not evaluated	
	in the performance analysis of this	
	assay. The influence of the serological	
	response against any of these agents	
	on the results of the Elecsys HSV-	
	2 IgG immunoassay is unknown.	
	Sample stability studies were	
	performed using serum only.	
	Results should always be assessed in	
	conjunction with the patient's medical	
	history, clinical examination and other	
	findings.	

Comparison of Assays—Similarities and Differences, continued

. 7	Immunoassay Comparison		
Feature	Elecsys HSV-2 IgG Immunoassay (Candidate Device)	Focus HerpeSelect 1&2 (Predicate Device: K000238)	
	Labeled Performance Cha	racteristics	
Percent	Expectant Mother Cohort (n=125)	Relative Sensitivities to Western	
Agreement	Positive Percent Agreement (95% CI):	Blot	
and	97.83% (88.47-99.94%)	Pregnant Cohort: 100%	
Sensitivity/	Negative Percent Agreement (95%	Sexually Active Adults: 99.3%	
Specificity	CI): 98.73% (93.15-99.97%)	Low Prevalence Population: 82.4%	
	,	Relative Specificity to Western Blot	
	Sexually Active Cohort (n=469)	Pregnant Cohort: 93.1%	
	Positive Percent Agreement (95% CI):	Sexually Active Adults: 95.1%	
	93.63% (88.60-96.90%)	Low Prevalence Population: 100%	
	Negative Percent Agreement (95% CI):	Zow Province Population: 10070	
	98.72% (96.75-99.65%)		
	Low Prevalence Cohort (n=200)		
	Positive Percent Agreement (95% CI):		
	75.00% (19.41-99.37%)		
	Negative Percent Agreement (95%		
•	CI):		
	98.47% (95.59-99.68%)	,	
Agreement with CDC	100%	100%	
Panel			

Comparison of Controls – Similarities and Differences

Comparison of Controls – Similarities and Differences		
Characteristic	Elecsys PreciControl HSV (Candidate Device)	Predicate Device: Elecsys PreciControl Anti-CCP (K081338)
Intended Use	The Elecsys PreciControl HSV is used for quality control of the Elecsys HSV-2 IgG immunoassay on the Elecsys and cobas e immunoassay analyzers.	Elecsys PreciControl Anti-CCP is used for quality control of the Elecsys Anti-CCP immunoassay on the Elecsys and cobas e immunoassay analyzers.
Levels	Two	Two
Format	Lyophilized	Lyophilized
Matrix	Human serum negative for HSV-2 IgG antibodies	Human serum
Analyte Concentration	PreciControl 1: ~ 0.30 COI PreciControl 2: ~ 8.00 COI	PreciControl 1: ~20 U/mL PreciControl 2: ~100 U/mL
Stability	 Store at 2-8°C up to the stated expiration date Reconstituted: 2 - 8°C: 21 days On the Elecsys 2010 and cobas e 411 analyzers at 20-25°C: Up to 5 hours On the MODULAR ANALYTICS E170, cobas e 601, and cobas e 602 analyzers: Up to 2 hours 	 Unopened: Store at 2-8°C up to the stated expiration date Reconstituted: -20°C: 1 month (freeze only once) On the analyzers at 20-25°C: Up to 5 hours After thawing: Use only once
Handling	Dissolve carefully the contents of one bottle by adding exactly 3.0 mL of distilled or deionized water and allow to stand closed for 15 minutes to reconstitute. Mix carefully, avoiding the formation of foam. Use a pipette to transfer the reconstituted control of 1 bottle into empty labeled Elecsys snap-cap bottles supplied.	Dissolve carefully the contents of one bottle by adding exactly 2.0 mL of distilled water and allow to stand closed for 15 minutes to reconstitute. Mix carefully, avoiding the formation of foam. Transfer aliquots of the freshly reconstituted controls into appropriate tubes for storage. Store the aliquots immediately at -20°C.





Food and Drug Administration 10903 New Hampshire Avenue Silver Spring, MD 20993

Roche Diagnostics c/o Ms. K. Colleen Adams Regulatory Affairs Principal 9115 Hague Road, P.O. Box 50416 Indianapolis, IN 46250-0416

AUG 2 4 2012

Re: K121895

Trade/Device Name: Elecsys HSV-2 IgG Immunoassay and PreciControl HSV

Regulation Number: 21 CFR 866.3305

Regulation Name: Herpes simplex virus serological assays

Regulatory Class: Class II Product Code: MYF, JJX Dated: June 27, 2012 Received: June 29, 2012

Dear Ms. Adams:

We have reviewed your Section 510(k) premarket notification of intent to market the device referenced above and have determined the device is substantially equivalent (for the indications for use stated in the enclosure) to legally marketed predicate devices marketed in interstate commerce prior to May 28, 1976, the enactment date of the Medical Device Amendments, or to devices that have been reclassified in accordance with the provisions of the Federal Food, Drug, and Cosmetic Act (Act) that do not require approval of a premarket approval application (PMA). You may, therefore, market the device, subject to the general controls provisions of the Act. The general controls provisions of the Act include requirements for annual registration, listing of devices, good manufacturing practice, labeling, and prohibitions against misbranding and adulteration.

If your device is classified (see above) into class II (Special Controls), it may be subject to such additional controls. Existing major regulations affecting your device can be found in Title 21, Code of Federal Regulations (CFR), Parts 800 to 895. In addition, FDA may publish further announcements concerning your device in the <u>Federal Register</u>.

Please be advised that FDA's issuance of a substantial equivalence determination does not mean that FDA has made a determination that your device complies with other requirements of the Act or any Federal statutes and regulations administered by other Federal agencies. You must comply with all the Act's requirements, including, but not limited to: registration and listing (21 CFR Part 807); labeling (21 CFR Parts 801 and 809); medical device reporting (reporting of medical device-related adverse events) (21 CFR 803); and good manufacturing practice requirements as set forth in the quality systems (QS) regulation (21 CFR Part 820). This letter will allow you to begin marketing your device as described in your Section 510(k) premarket notification. The FDA finding of substantial equivalence of your device to a legally marketed

Page 2 – Ms. Colleen Adams

predicate device results in a classification for your device and thus, permits your device to proceed to the market.

If you desire specific advice for your device on our labeling regulation (21 CFR Parts 801 and 809), please contact the Office of *In Vitro* Diagnostic Device Evaluation and Safety at (301) 796-5450. Also, please note the regulation entitled, "Misbranding by reference to premarket notification" (21 CFR Part 807.97). For questions regarding the reporting of adverse events under the MDR regulation (21 CFR Part 803), please go to http://www.fda.gov/MedicalDevices/Safety/ReportaProblem/default.htm for the CDRH's Office of Surveillance and Biometrics/Division of Postmarket Surveillance.

You may obtain other general information on your responsibilities under the Act from the Division of Small Manufacturers, International and Consumer Assistance at its toll-free number (800) 638-2041 or (301) 796-7100 or at its Internet address http://www.fda.gov/cdrh/industry/support/index.html.

Sincerely yours,

Sally A. Hojvat, M.Sc., Ph.D.

Director

Division of Microbiology Devices
Office of *In Vitro* Diagnostic Device

Evaluation and Safety

Center for Devices and Radiological Health

Enclosure

Indications for Use

Device Name: <u>Elecsys HSV-2 IgG Immunoassay and PreciControl HSV</u>

Indications for Use:

Elecsys HSV-2 IgG Immunoassay

The Roche Elecsys HSV-2 IgG immunoassay is a test for the *in vitro* qualitative determination of IgG class antibodies to HSV-2 in human serum and lithium-heparin plasma, K₂-EDTA plasma, and K₃-EDTA plasma. The test is intended for sexually active individuals and expectant mothers as an aid in presumptive diagnosis of HSV-2 infection. The predictive value of positive or negative results depends on the population's prevalence and the pretest likelihood of HSV-2. The electrochemiluminescence immunoassay "ECLIA" is intended for use on the indicated Elecsys and **cobas e** immunoassay analyzers.

This test is not FDA cleared for screening blood or plasma donors.

The performance of this assay has not been established for use in a pediatric population, neonates and immunocompromised patients or for use at point of care facilities.

Prescription Use XXX (Part 21 CFR 801 Subpart D)

AND/OR

Over-The-Counter Use ____(21 CFR 807 Subpart C)

Division Sign-Off

Office of In Vitro Diagnostic
Device Evaluation and Safety

510(k) K121895

Page 1 of 2

Indications for Use

Elecsys PreciControl HSV

The Elecsys PreciControl HSV is used for quality control of the Elecsys HSV-2 IgG immunoassay on the Elecsys and **cobas** e immunoassay analyzers.

Prescription Use XXX (Part 21 CFR 801 Subpart D)

AND/OR

Over-The-Counter Use _____(21 CFR 807 Subpart C)

(PLEASE DO NOT WRITE BELOW THIS LINE-CONTINUE ON ANOTHER PAGE IF NEEDED)

Concurrence of CDRH, Office of In Vitro Diagnostic Devices (OIVD)

Division Sign-Off

amas tela

Office of in Vitro Diagnostic
Device Evaluation and Safety

570(k) <u>K121895</u>